XenServer (paid version) Migration User manual

1．XenServer Migration introduction 3

1.1 XenServer Migration precondition 4

1.2 Topology map 4

2．Configuration 5

2.1 XenServer configuration 5

2.1.1 Pool conception 5

2.1.2 Master conception 5

2.1.3 Citrix WLB Virtual Appliance conception 7

2.1.4 Enter/Exit maintenance mode manually 7

2.2 Software configuration 10

2.2.1 Add XenCenter 10

2.2.2 Check XenCenter status 11

2.2.3 Shutdown Setting 11

2.3 NMC configure 14

2.3.1 UPS shutdown timer 14

2.3.2 Software timer and NMC timer 15

3．Shutdown testing 17

3.1 XenServer shutdown Action reflected table 17

3.2 Simulate shutdown testing 17

3.2.1 Case one 18

3.2.2 Case two 19

3.2.3 Case three 19

4. Protect XenCenter 20

4.1 Protect XenCenter via Software standard version 20

4.2 Protect XenCenter via SPS 20

5. Protect NAS/SAN（NAS QNAP TS-269 pro as example） 21

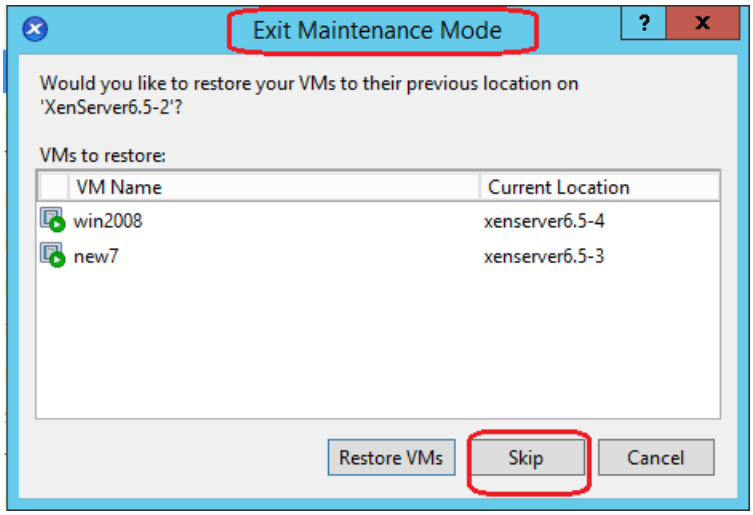
5.1 Over viewer 21

5.2 Protect NAS/SAN via SNMP 22

5.3 Protect NAS/SAN via USB 23

1. XenServer Migration introduction

- Software will trigger the XenServer hosts (Powered by UPS) enter maintenance mode, so as to migrate the VMs to the other online XenServer hosts After the UPS AC failing. At the End, Software will shut down the XenServer hosts gracefully when the time is met. If the UPS AC restore, Software will trigger the XenServer exit maintenance mode, but the VMs won't go back to the XenServer host.
  Note: The "Exit Maintenance Mode" function of the Software is just like you choose the "Skip" button when you exit maintenance mode manually, so the VMs won't go back to the XenServer host.



- If UPS AC restore when the VMs are migrating, the VMs will go on migrating to the other online XenServer hosts and the XenServer hosts will go on entering maintenance mode. Then the XenServer hosts will exit maintenance mode immediately.
- If the VMs are migrating, but all the other XenServer hosts are offline, the migration will be hung and the last host and all the VMs will be crash. Please refer to section 4 to get the detailed information about how to protect the last host and VMs shut down gracefully.
- Software supply two options "maintenance mode" and "shutdown mode" for XenServer hosts:
  - ✧ If just choose "maintenance mode", XenServer host will enter maintenance mode and the VMs will migrate to the other online XenServer hosts, but the host won't be shut down.
  - ✧ If just choose "shutdown mode", the VMs will migrate to the other online XenServer hosts and the host will be shut down.
  - ✧ If both options are chosen, it is the same with just choose "shutdown mode", the VMs will migrate to the other online XenServer hosts and the host will be shut down.

1.1 XenServer Migration precondition

Hardware：

- UPS with network management card.
- More than two XenServer hosts (paid version)
- Network storage Server: NAS/SAN

Software：

- XenCenter client should be installed on windows system.
- All the XenServer hosts can enter maintenance by manually
- Software must be installed in any other Windows/Linux system in the same LAN with XenServer host

1.2 Topology map

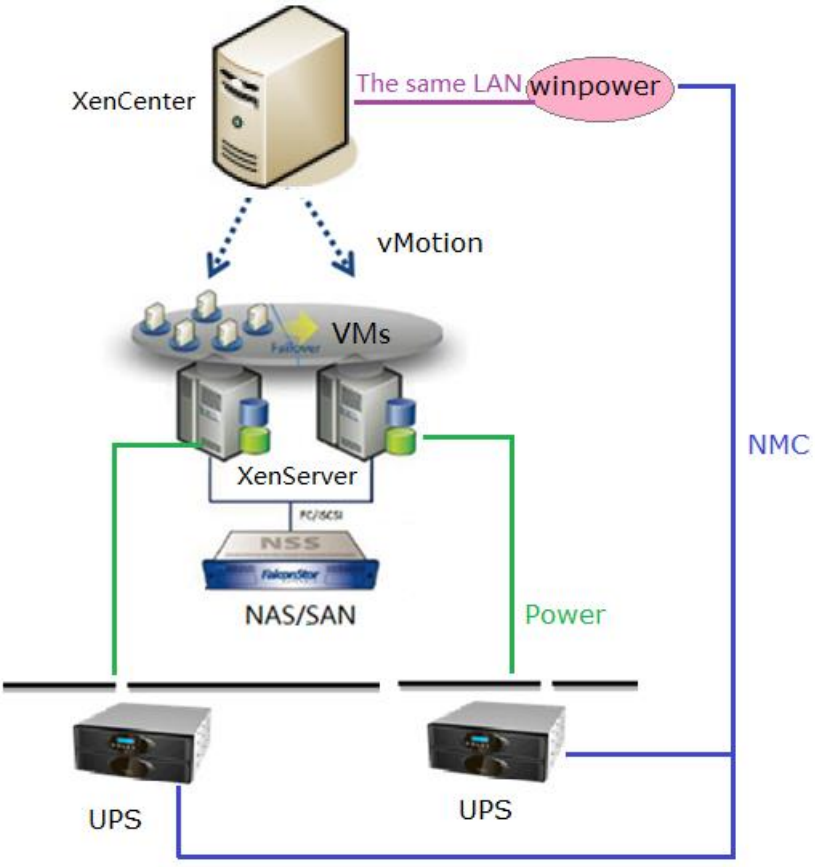


Image 1.2

2. Configuration

2.1 XenServer configuration

2.1.1 Pool conception

- XenServer Migration can be work in the same pool, the VMs can be migrated to the other online hosts in the same pool.
  Please refer to the following image, there are one pool named pool1 and there are four XenServer hosts under the pool1 tree map.

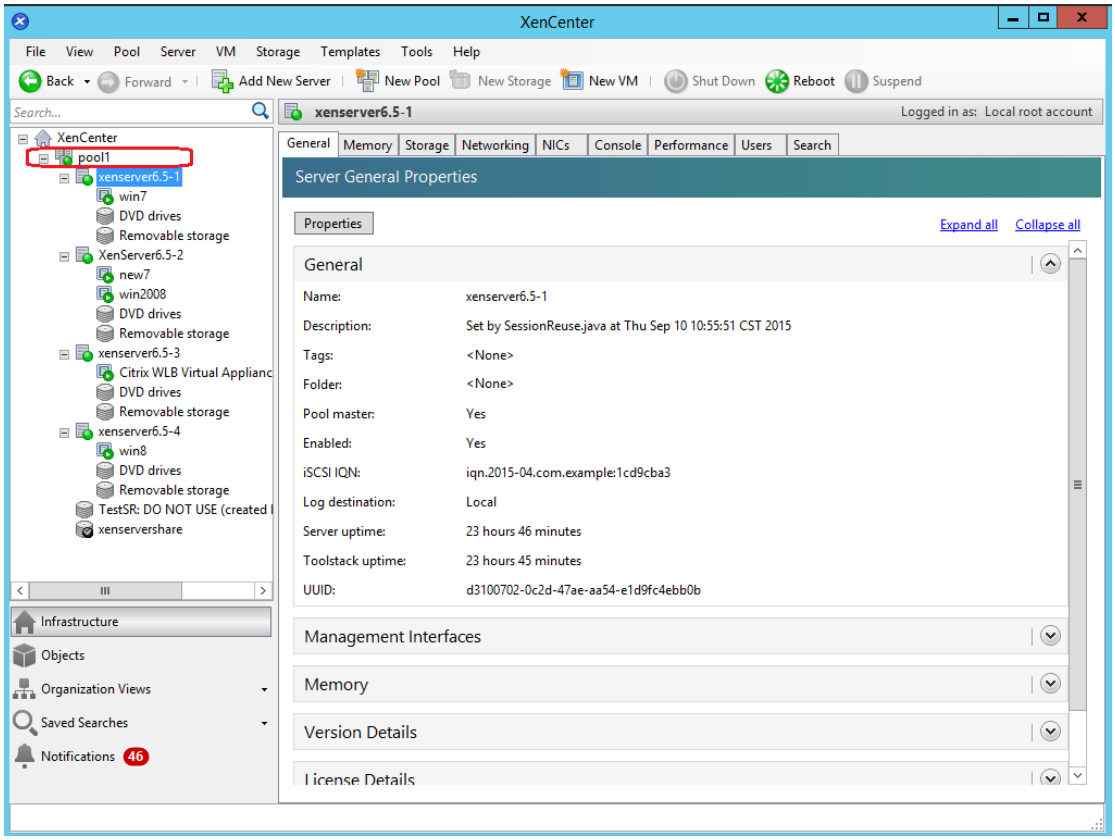


Image 2.1.1

2.1.2 Master conception

- There is one master XenServer host in every pool, it is XenCenter
  Please refer to the following image, the “xenserver6.5-1” host is the master host, it is also the XenCenter.
  Note:
  All the migration can be executed when the XenCenter is online, so please make sure the

XenCenter is the last shutdown host, refer to the section 4 to get more information about how to shut down the last host and the VMs.

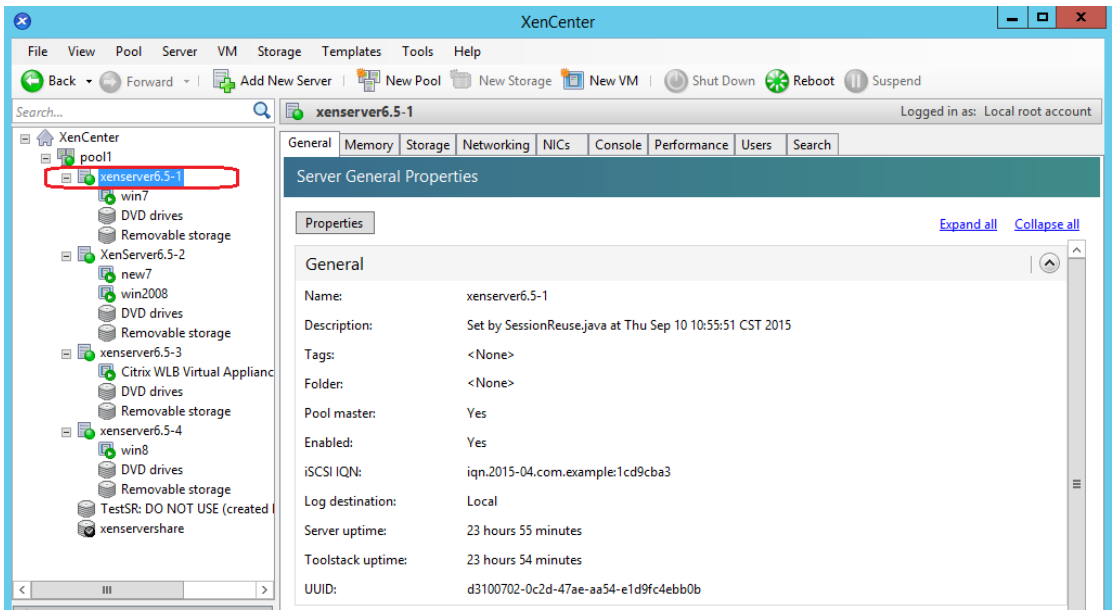


Image 2.1.2-1

- If you are not sure which XenServer is the master host, click the pool.
  Click “pool” ->”General”, the “Address” panel will list the master host IP address.

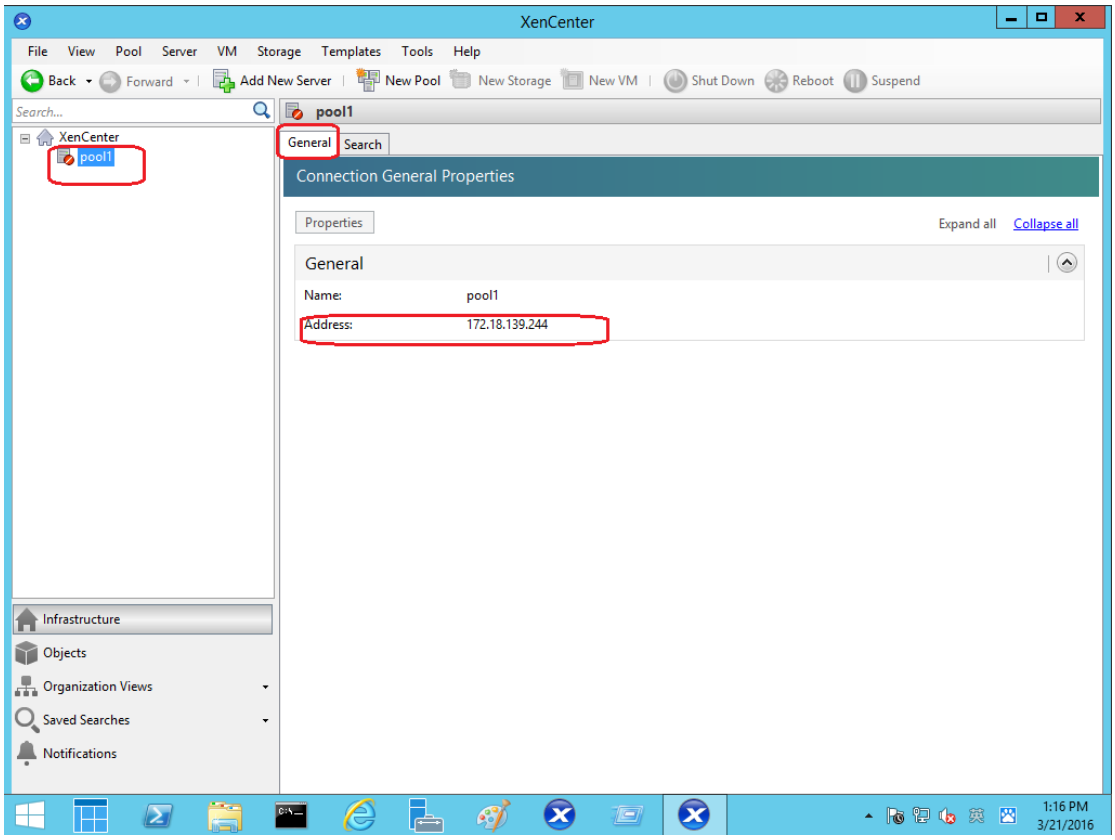


Image 2.1.2-2

2.1.3 Citrix WLB Virtual Appliance conception

- All the migration can be executed when the “Citrix WLB Virtual Appliance” is online, please make sure the “Citrix WLB Virtual Appliance” is always online
  Note:
  The “Citrix WLB Virtual Appliance” can be running on any one XenServer host.

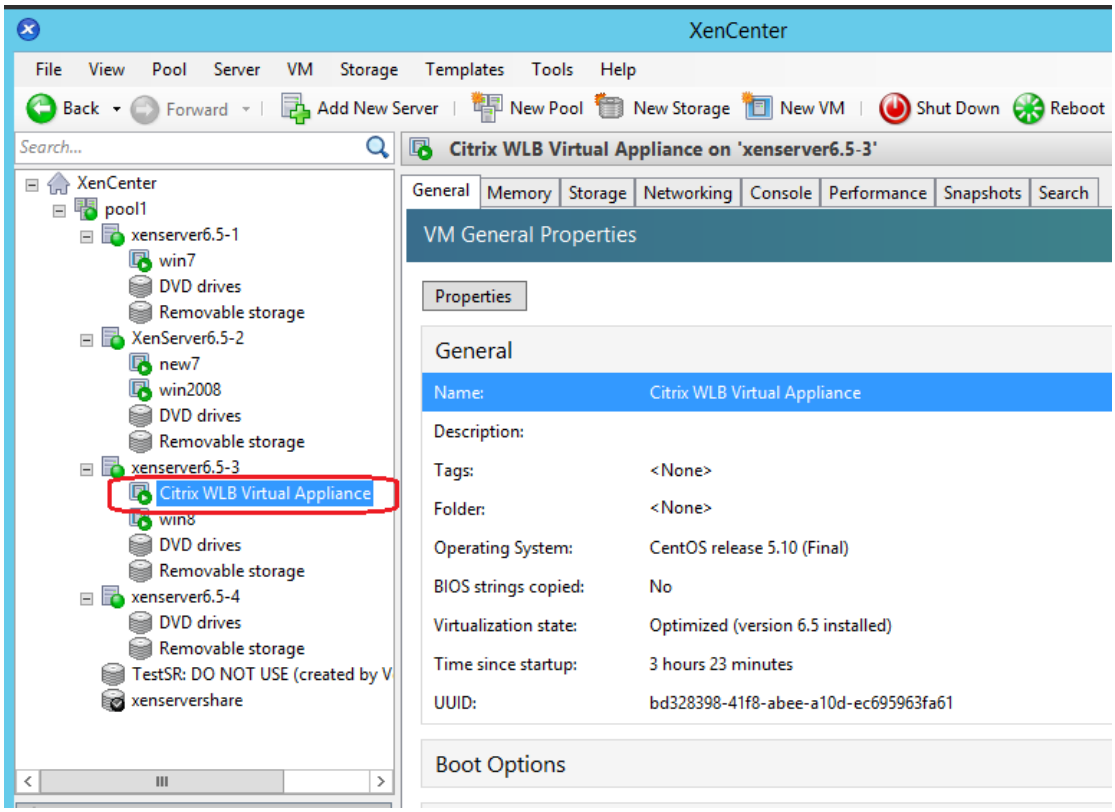


Image 2.1.3

2.1.4 Enter/Exit maintenance mode manually

- Make sure all the XenServer hosts can enter/exit maintenance mode manually. Right click the XenServer host, choose “Enter Maintenance Mode”

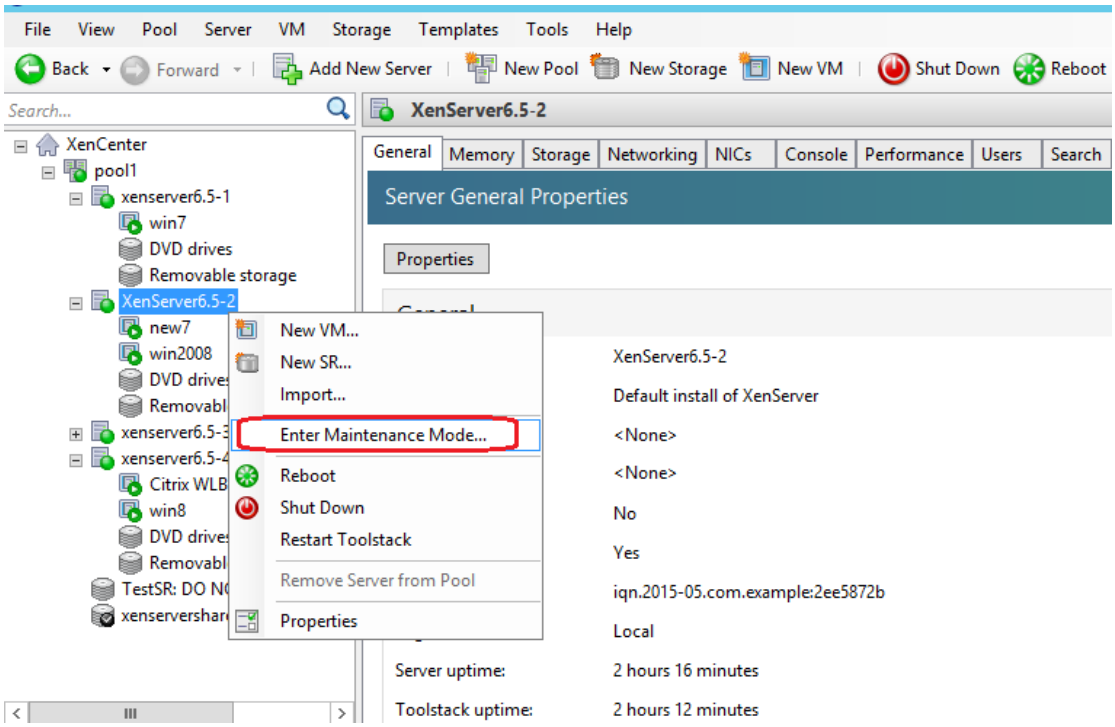


Image 2.1.4-1

- click“Enter Maintenance Mode”button

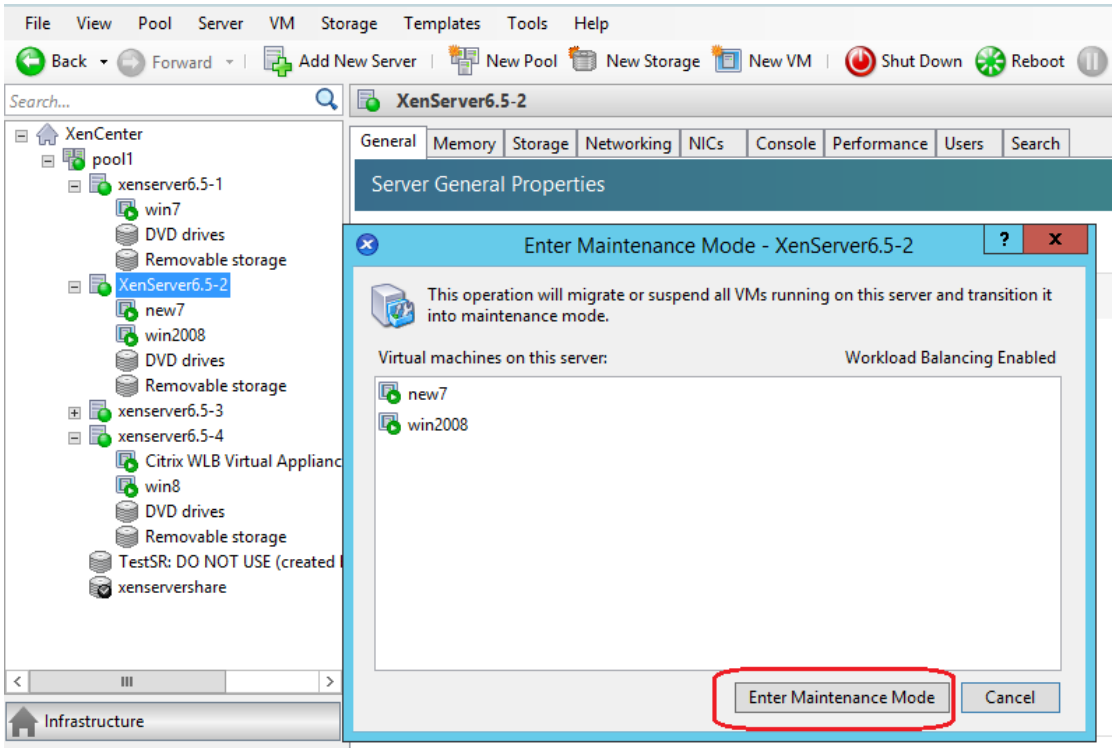


Image 2.1.4-2

- VMs begin to migrate

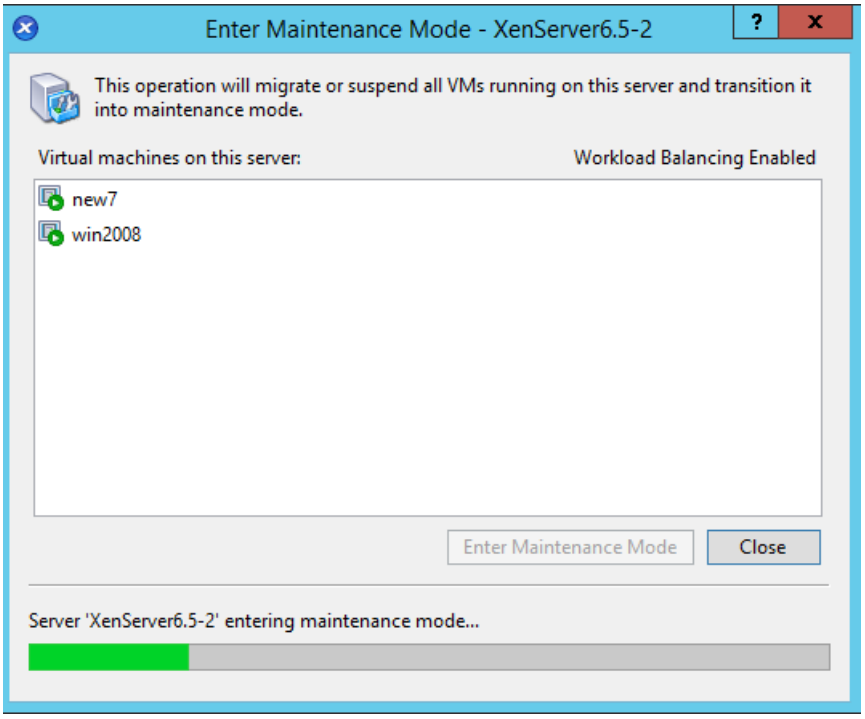


Image 2.1.4-3

- Choose “Exit Maintenance Mode”, check if the host can exit maintenance mode

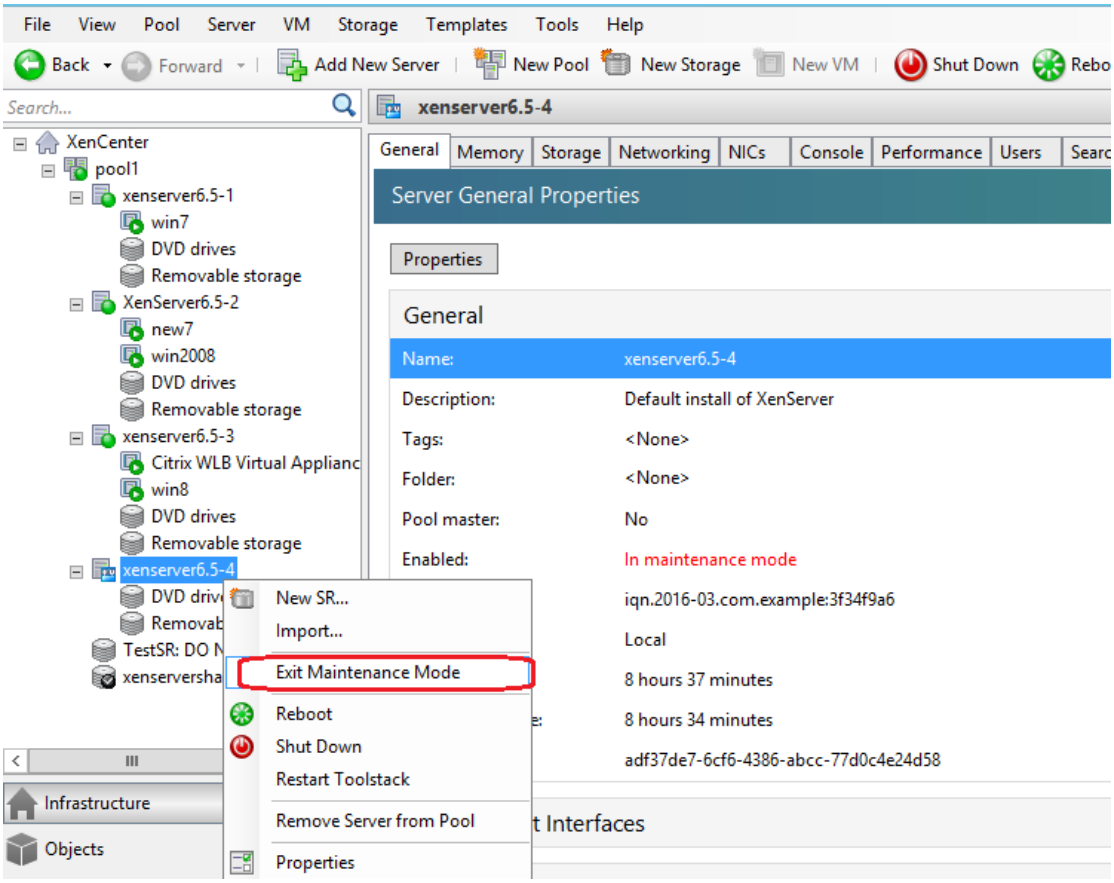


Image 2.1.4-4

2.2 Software configuration

2.2.1 Add XenCenter

- Open Software manager. Click “System”->“Act as Administrator”. Input the administrator password.
- Click “VMotion” node，click “Add” button

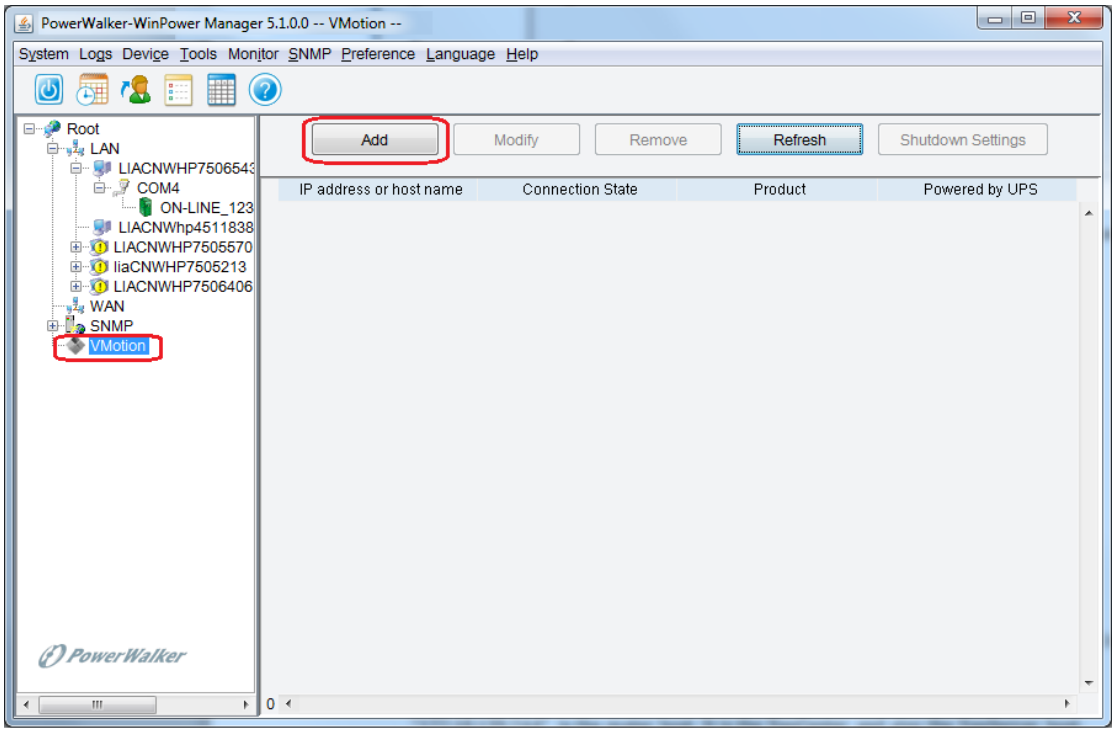


Image 2.2.1-1

- Choose “Citrix XenCenter” in “Product” drop-down list, Input the XenCenter IP, user name, password

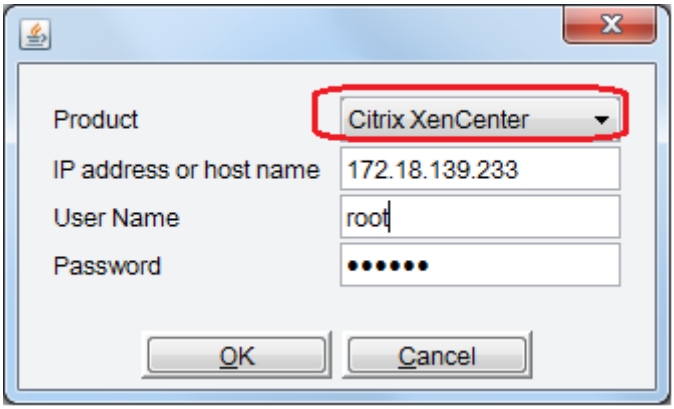


Image 2.2.1-2

2.2.2 Check XenCenter status

- The XenCenter and the XenServer hosts that are in the same pool with XenCenter will be listed under the “VMotion” node after adding the XenCenter
  Note:
  “172.18.139.233” is the mater host. It is the XenCenter and also the XenServer host.

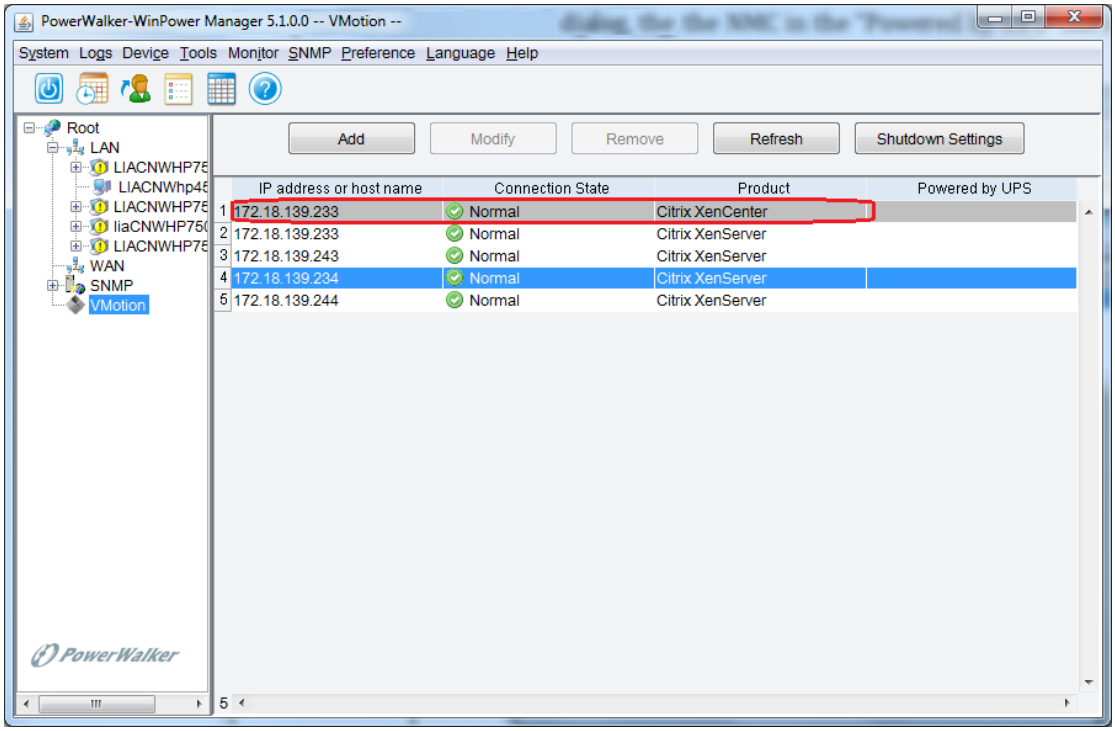


Image 2.2.2

Parameters	Define
IP address	List the XenCenter IP and XenServer hosts IP
Connection status	List the XenCenter IP and XenServer hosts IP connection status. The status refresh every 30s
Powered by	List XenServer hosts powered by which UPS, depending on NMC IP
Product	There are two products: Citrix XenCenter and Citrix XenServer

2.2.3 Shutdown Setting

- Choose “SNMP” node，click“SNMP”->“Search Device”，Input NMC start IP and end IP, search the NMC.

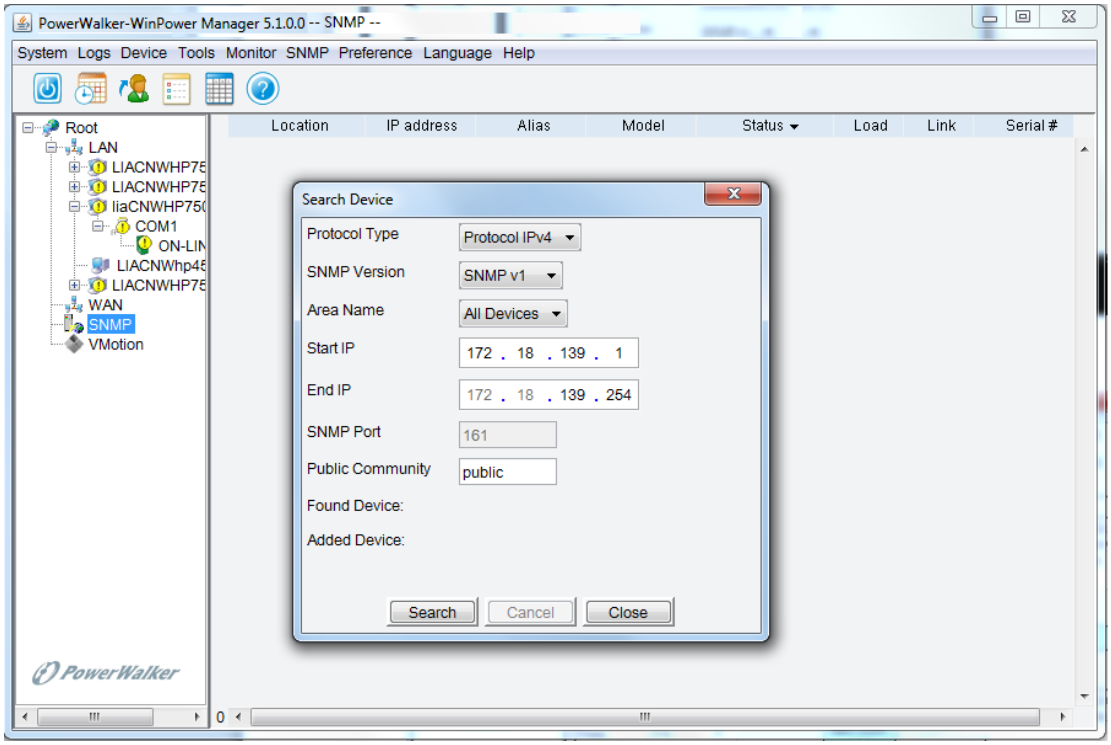


Image 2.2.3-1

- The NMC cards are added under the “SNMP” node as below:

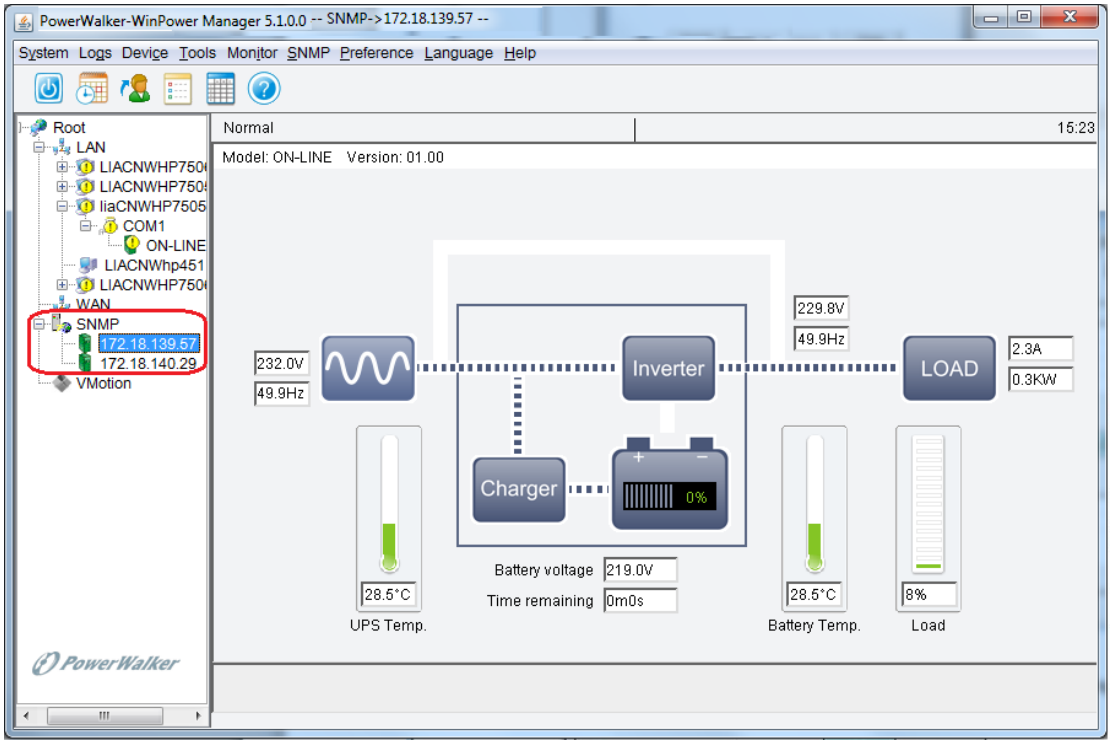


Image 2.2.3-2

- Choose the XenServer hosts under the “VMotion” node, click “Shutdown Settings” button

  Note: the host “172.18.139.233” is not only XenServer but also XenCenter, so this host should be always online. Please don’t set the shutdown parameter for the XenCenter.

Please refer to section 4 to protect XenCenter shutdown.

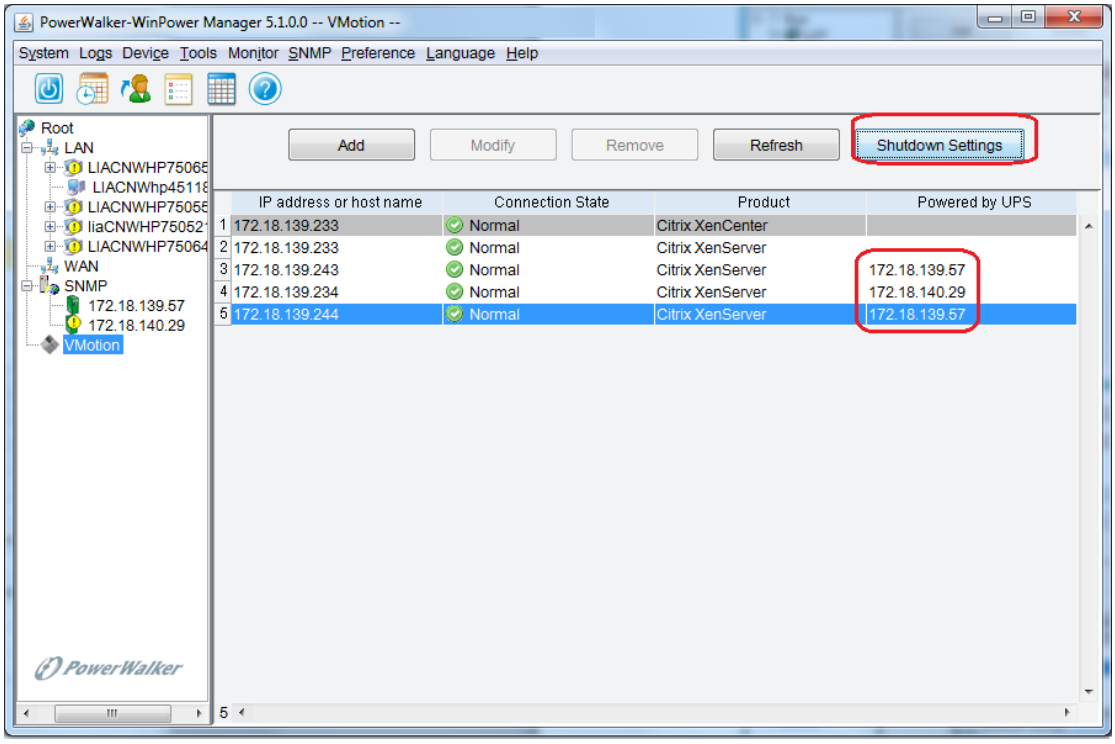


Image 2.2.3-3

- Open the “Shutdown Setting” dialog, the NMC in the “Powered by UPS” list is as same as the NMC under the “SNMP” tree node

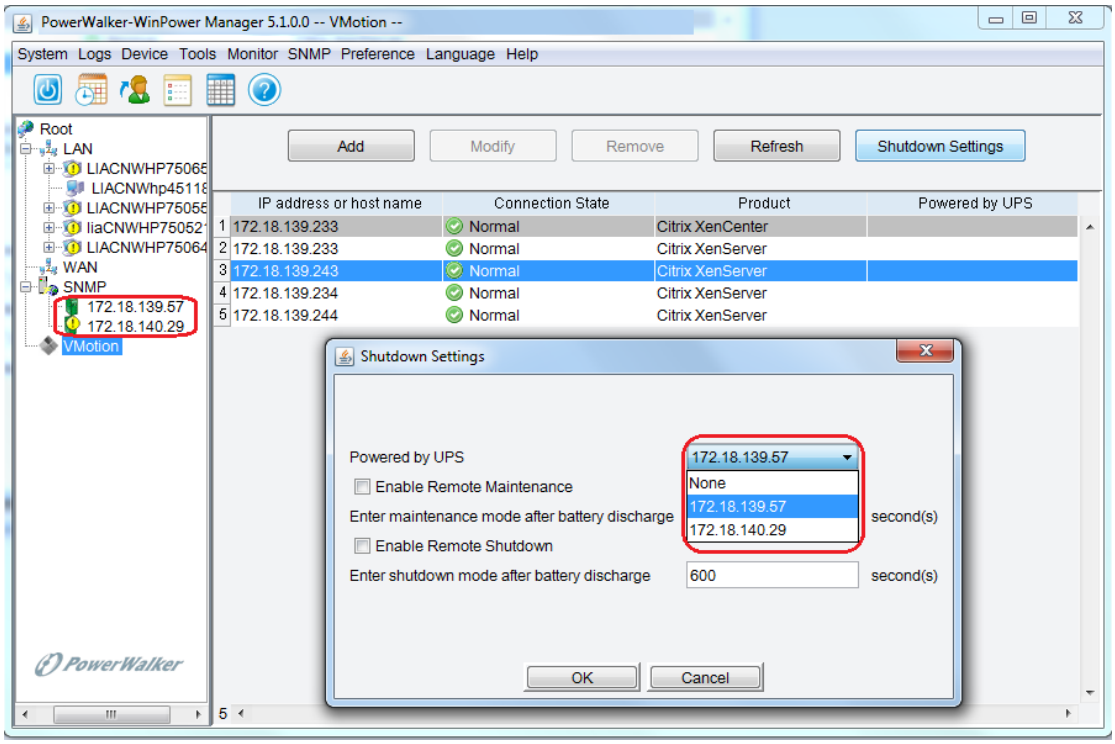


Image 2.2.3-4

- “Shutdown Setting” parameters as below:

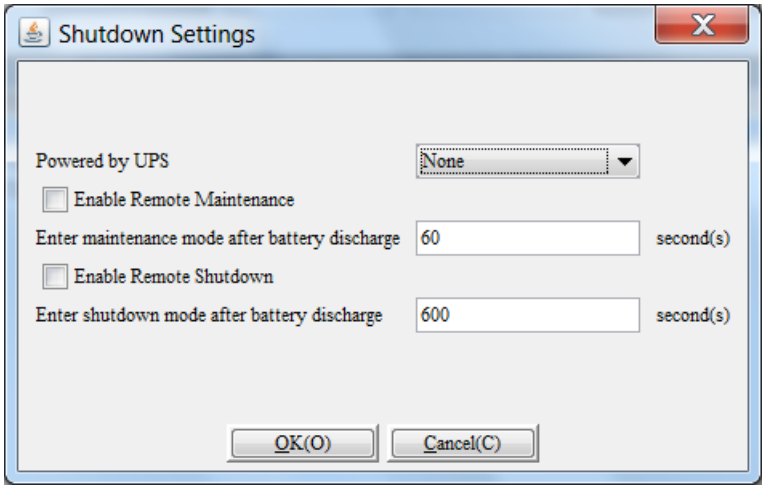


Image 2.2.3-5

Parameters	Define
Powered by UPS	This parameter identifies the XenServer hosts powered by which UPS, depending on NMC IP. The NMC in the "Powered by UPS" list must already exist in "SNMP" tree node.
Enable Remote Maintenance	If the option is enabled, the XenServer will enter maintenance mode and all the VMs will migrate to the other online XenServer host, the host won't shut down
Enter maintenance mode after battery discharge	Set the timer for the XenServer enter maintenance mode After UPS AC failing
Enable Remote Shutdown	If the option is enabled, the VMs will migrate to the other online host firstly and then XenServer hosts will shut down
Enter shutdown mode after battery discharge	Set the timer for the XenServer enter shutdown mode After UPS AC failing

2.3 NMC configure

2.3.1 UPS shutdown timer

- Open NMC web, Click "UPS Management" -> "UPS shutdown"
  For the "AC Failed" Actions，We advise choose "Client&UPS Shutdown" option，so that when the timer is met，NMC will shut down the UPS. If choose "Client" option, the UPS will discharge until battery low when AC fail.
  For the "AC Failed" Warning period, the default timer is 900s. After the UPS AC fail for "Warning Period" time, The UPS shutdown ("UPS Shutdown Delay" timer) begin counting down.

- For example, the “Warning Period” is 900S and the “UPS Shutdown Delay” is 120S as below image:
  After UPS AC fail for 900S, the UPS shutdown count down. After AC failing 1020S (900+120) s, the UPS shut down
  For more info, please refer to NMC user manual <<Network Management Card User Manual.doc>>

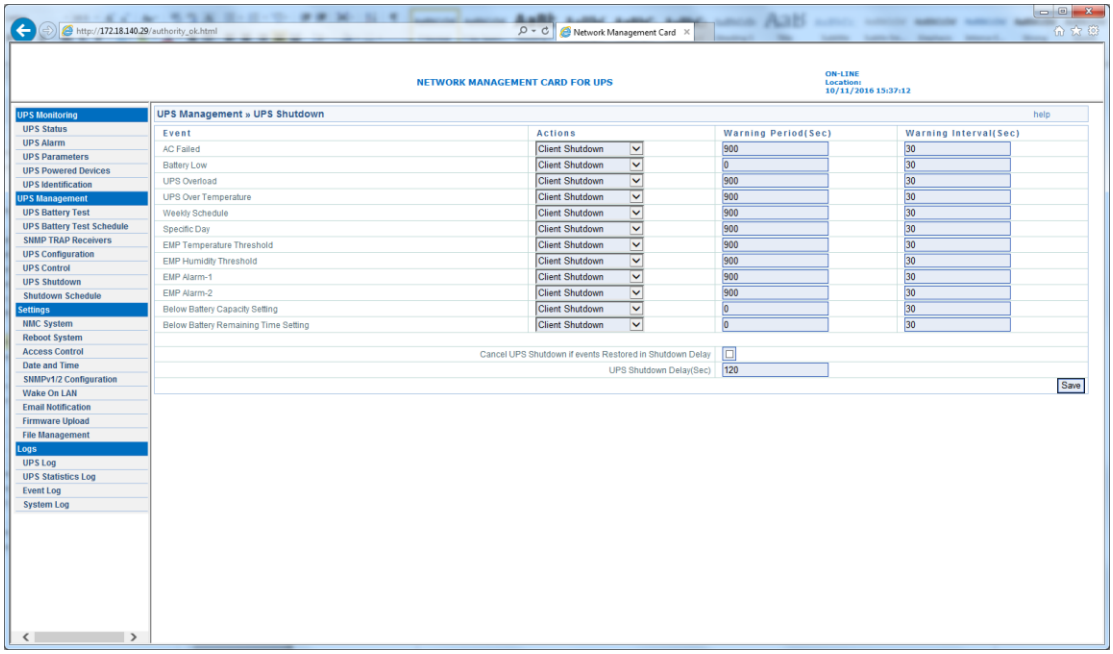


Image 2.3.1

2.3.2 Software timer and NMC timer

- Software maintenance time and shutdown time for migration should be shorter than NMC “Warning Period”
  For example: If the NMC shutdown setting is as the above image “Image 2.3.1” and the “Warning Period” for “AC Failed” is 900s, then the maintenance time and shutdown time should be shorter than 900s, so as to the UPS reserve enough time for Migration.

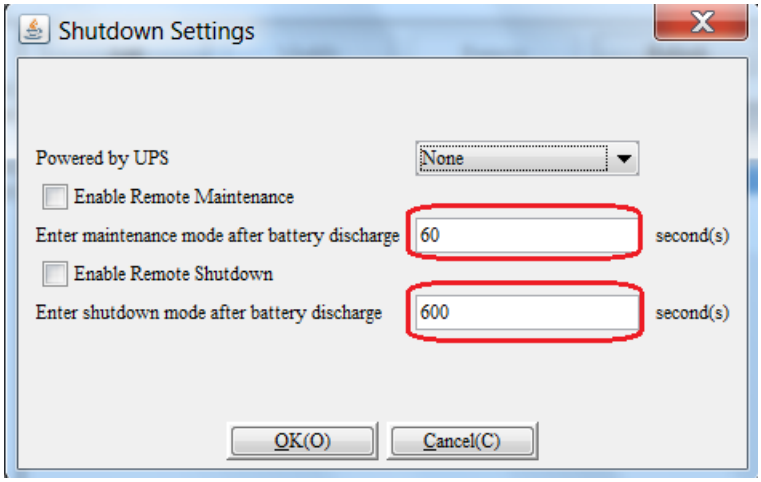


Image 2.3.2

3. Shutdown testing

3.1 XenServer shutdown Action reflected table

Remote Maintenance in Software	Remote Shutdown in Software	VMs Action	Hosts Action
Enable	Enable	VMs migrates to the other available host	Shut down
Disable	Enable	VMs migrates to the other available host	Shut down
Enable	Disable	VMs migrates to the other available host	Crash
Disable	Disable	Crash	Crash

3.2 Simulate shutdown testing

Test environment:

There are two XenServer hosts, two pieces of UPS and two pieces of NMC

XenServer1 is powered by UPS1, XenServer2 is powered by UPS2

UPS1 connect with NMC1, UPS2 connect with NMC2

- NMC web: The shutdown setting for the two NMC is as below image.
  "Warning Period" for the "AC failed" is three minutes (180s)
  "UPS shutdown delay" time is two minutes (120s)

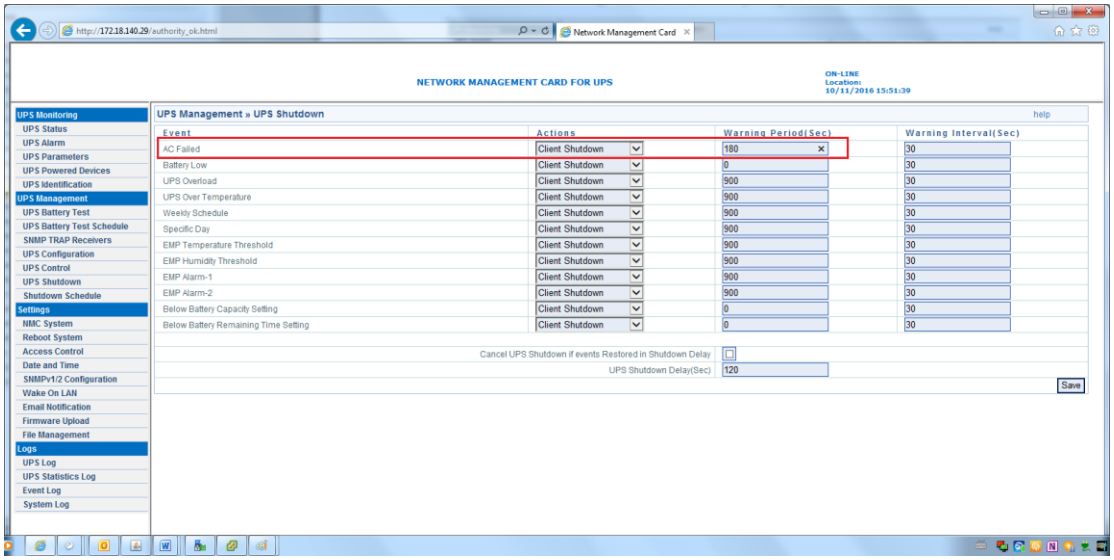


Image 3.2-1

- Software side: XenServer1 powered by UPS1, maintenance time is 1 minute, shutdown time is 2 minutes

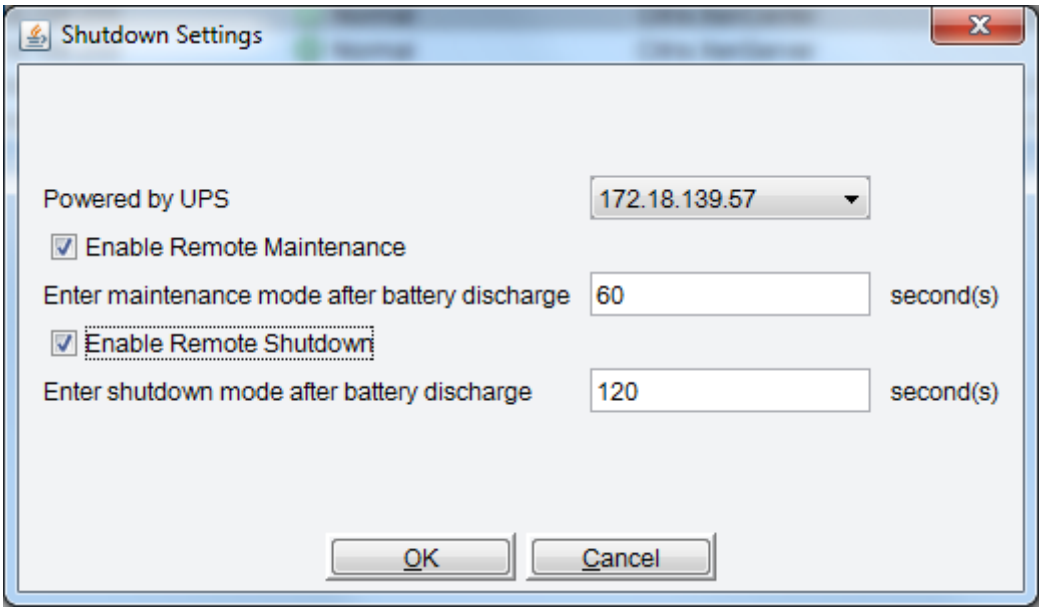


Image 3.2-2

- Software side: XenServer2 powered by UPS2, maintenance time is 1 minute, shutdown time is 2 minutes

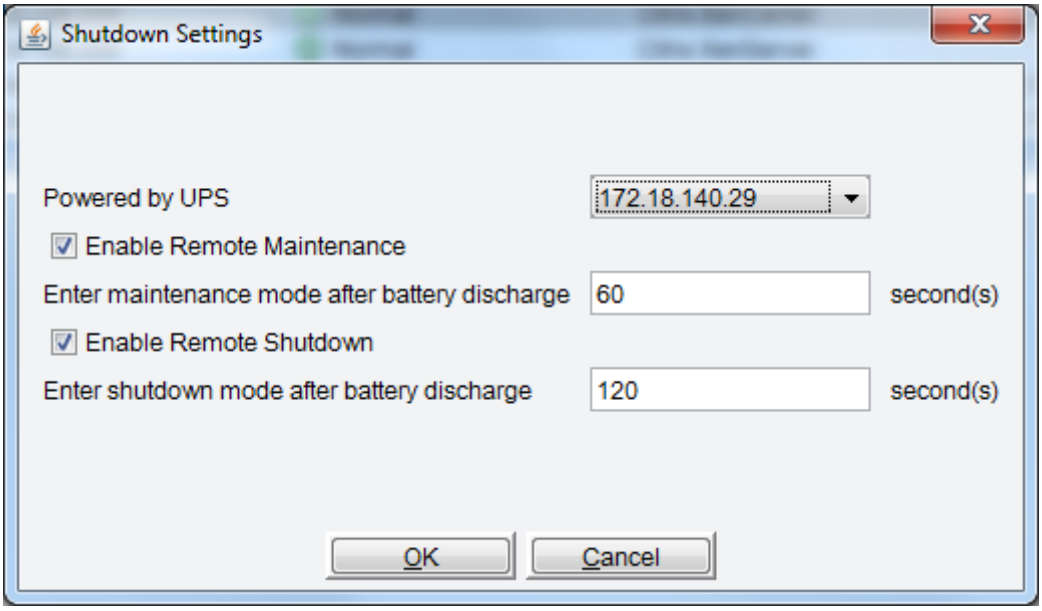


Image 3.2-3

3.2.1 Case one

- Test result:
  - After UPS1 AC failing for one minute, XenServer1 enter maintenance mode, the VMs migrate to XenServer2
  - After UPS1 AC failing for two minutes, XenServer1 shut down

- After UPS1 AC failing for three minutes, UPS1 shutdown counter down
- After UPS1 AC failing for five minutes, UPS1 shut down
- After UPS1 AC restoring, XenServer1 start up and exit maintenance mode

3.2.2 Case two

- Test result:
- After UPS1 AC failing for one minute, XenServer1 enter maintenance mode, the VMs migrate to XenServer2
- If the UPS1 AC restore when the VMs are migrating, the VMs go on migrating and the XenServer1 go on entering maintenance mode. But the XenServer1 will exit maintenance instantly
- UPS1 is online, XenServer1 works fine.

3.2.3 Case three

We assume there are three UPS devices, NMC cards, XenServer hosts
XenServer1 is powered by UPS1, XenServer2 is powered by UPS2, XenServer3 is powered by UPS3.
UPS1 is connected with NMC1, UPS2 is connected with NMC2, UPS3 is connected with NMC3.
XenServer1 is the XenCenter

- Test result:
- UPS2 and UPS3 AC fail at the same time.
- After AC failing for one minute, XenServer2 enter maintenance mode, the VMs migrate to XenServer3 or XenServer1. Then XenServer3 enter maintenance mode, all the VMs migrate to XenServer1
- After AC failing for two minutes, XenServer2 and XenServer3 shut down
- After AC failing for three minutes, UPS2 and UPS3 shutdown counter down
- After AC failing for five minutes, UPS2 and UPS3 shut down
- When the AC of UPS2 and UPS3 restore, XenServer2 and XenServer3 will startup and exit maintenance mode.

➢

4. Protect XenCenter

4.1 Protect XenCenter via Software standard version

Image 4.1-1

- Software is installed on XenCenter(the master host in the pool)， UPS is connected with XenCenter via USB/RS232. When the UPS AC fails, the Software send the shutdown notification to XenCenter. When the XenCenter accept the shutdown notification, it will shut down the VMs firstly then shut down host.

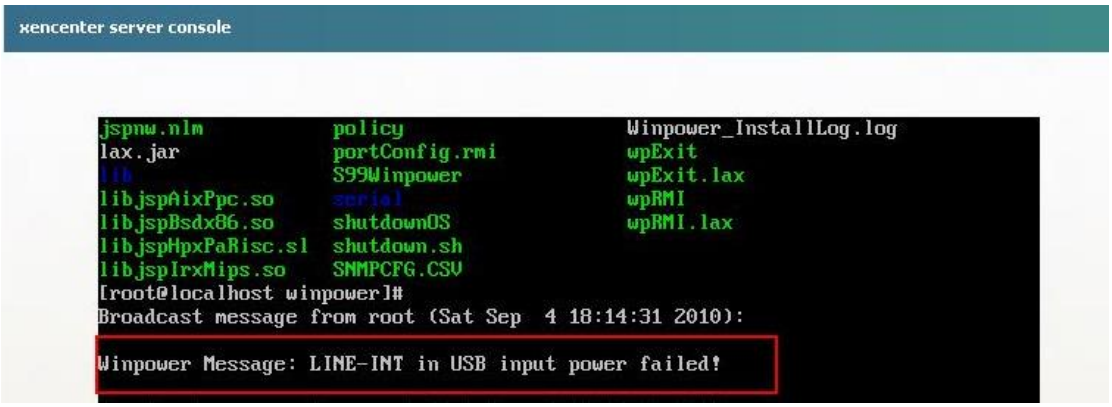


Image 4.1-2

- For more info refer to the user manual as below.
  <UserManual_for_XenServer.pdf>

4.2 Protect XenCenter via SPS

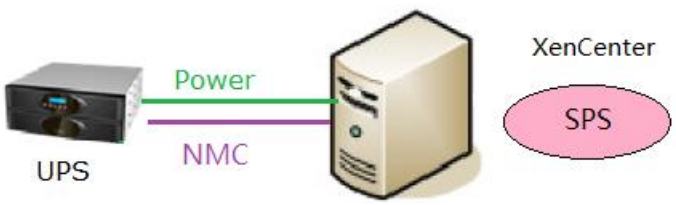
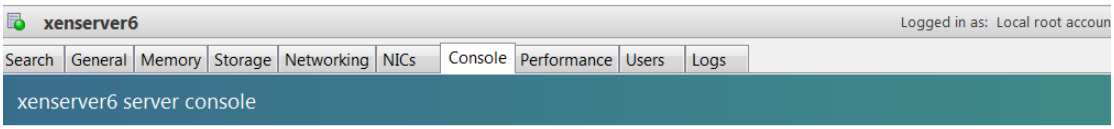


Image 4.2-1

- SPS is installed on XenCenter， UPS is connected with NMC, Add NMC in SPS.
  When the UPS AC fail, the NMC will send the shutdown notification to SPS, the SPS will send shutdown notification to XenCenter. When the XenCenter receive the notification, it will shut down the VMs firstly then shut down the host.



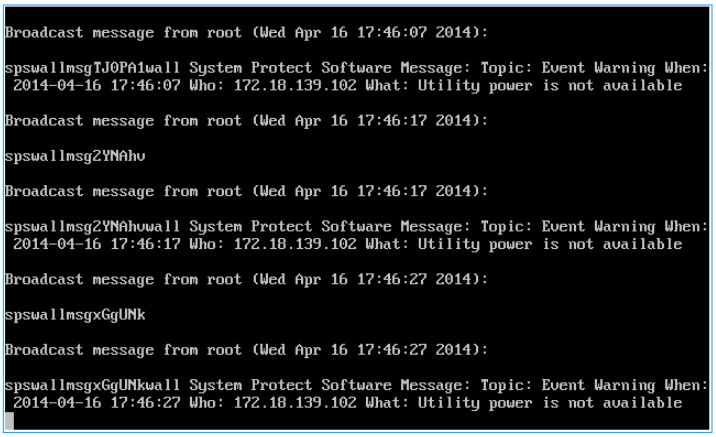


Image 4.2-2

- For more info about NMC shutdown, please refer to user manual as below.

SPS for XenServer.doc

5. Protect NAS/SAN（NAS QNAP TS-269 pro as example）

5.1 Over viewer

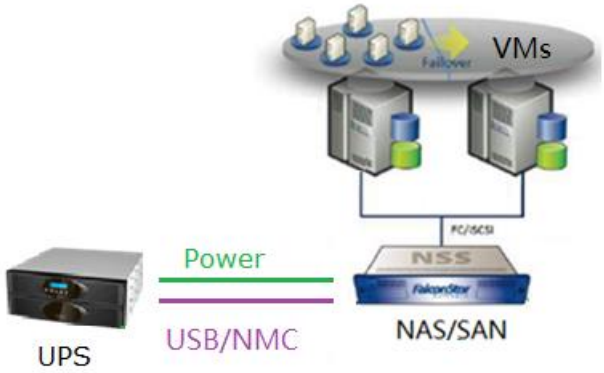


Image 5.1

5.2 Protect NAS/SAN via SNMP

Note：Please purchase NAS/SAN attachment with “USB/SNMP” function

- NAS/SAN is powered by UPS，UPS is connected with NMC
- Open NAS Web，click “External Device”->“UPS”, choose “UPS with SNMP management” in the “Protocol”, input NMC IP, set the shutdown condition

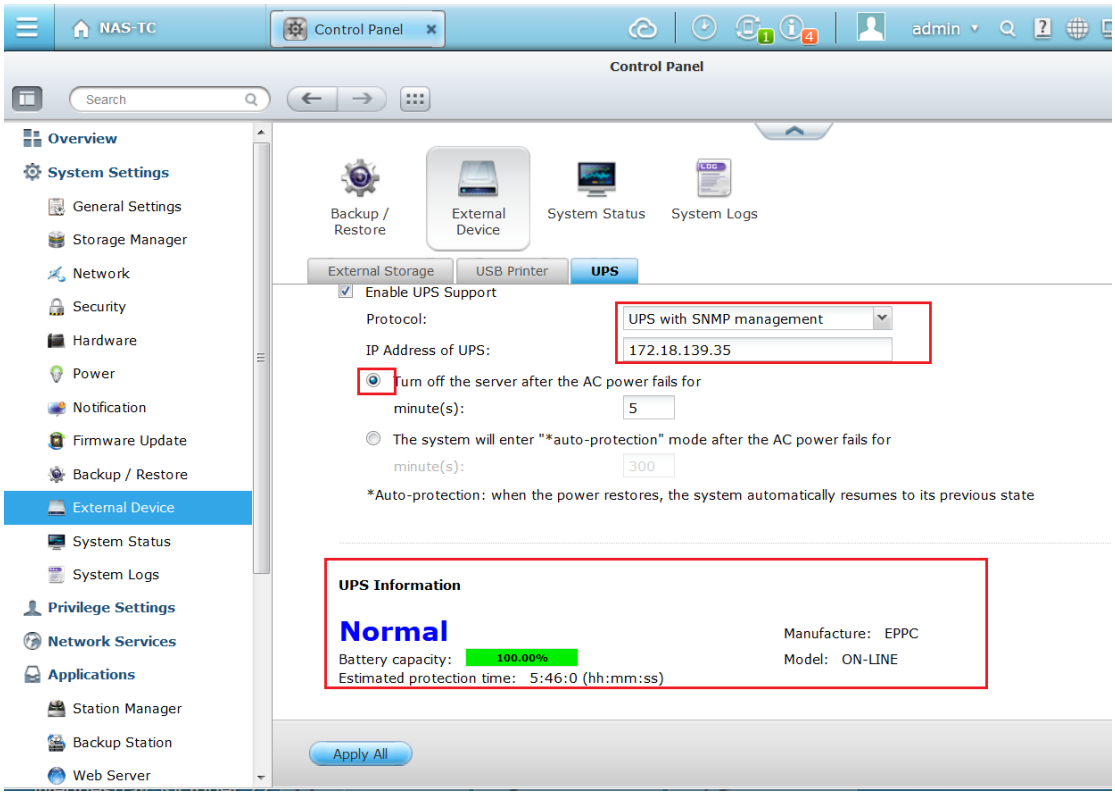


Image 5.2-1

- NAS server will be shut down after UPS AC failing for 5 minutes. You can check the system logs also.

  The system logs recorded “Power loss detected on UPS. System would be shut down after 5 minutes”

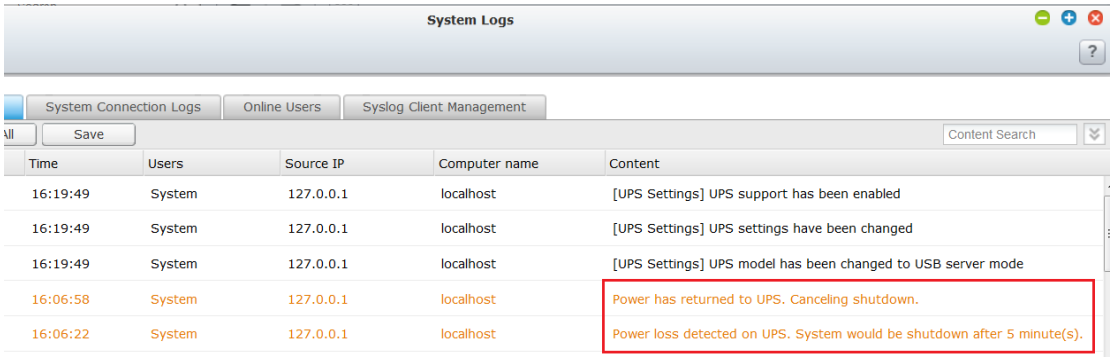


Image 5.2-2

5.3 Protect NAS/SAN via USB

Note：Please purchase NAS/SAN attachment with “USB/SNMP” function

- NAS/SAN is powered by UPS，UPS is connected with NAS/SAN via USB
- Please take priority of purchasing HID Power Device UPS, because only partly Q1 UPS are supported. Following Q1 UPS are passed our testing:
  PID/VID: 0665/5161, 06da/0003, 06da/0004
- Open NAS Web，choose “External Device”->“UPS”, UPS will be detected automatically
  Set the shutdown condition.

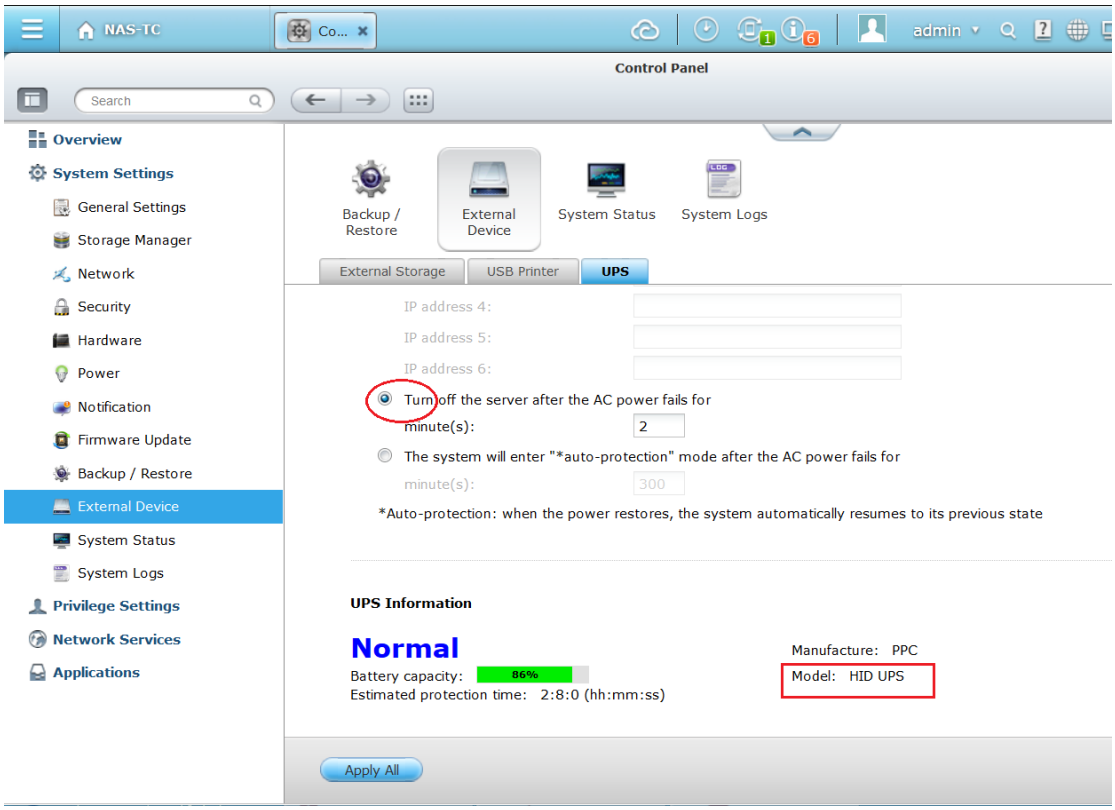


Image 5.3

- NAS will be shut down after UPS AC failing for 2 minutes.